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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington DC 20554

In the Matter of	)	
	)	
Amendment of Part 90 of the	)	PR Docket No. 93-61
Commission's Rules to Adopt	)	RM-8013
Regulations for Automatic	)	
Vehicle Monitoring Systems	)	

COMMENTS OF SYMBOL TECHNOLOGIES, INC.

1. Symbol Technologies, Inc. ("Symbol") hereby submits these Comments in response to the Notice of Proposed Rule Making in the above-captioned proceeding.[1/]

I. INTRODUCTION

2. Millions of low-power devices operating under Part 15 of the Commission's Rules serve commercial users. Much of that equipment, together with a rapidly growing range of consumer products, is now threatened by the Commission's proposal to license a Location and Monitoring Service ("LMS") in the 902-928 MHz band. The Commission is able to overlook the impact of this action on Part 15 operations only because Part 15 is "secondary" to licensed operations.[2/] To maintain that stance, however, increasingly requires an ostrich-like disregard of reality. Part 15 has outgrown radio-controlled toys and become the foundation for fast-growing industries that use sophisticated technology. The Commission can no longer ignore the resulting

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1/ Automatic Vehicle Monitoring Systems, PR Docket No. 93-61, FCC 93-141 (released April 9, 1993) ("Notice").

2/ 47 C.F.R. § 15.5(b).

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economic activity in making its allocation decisions. To the contrary, the Commission should be doing everything it can to foster shared, unlicensed operations as a proven way of making greatest possible use of a limited spectrum.

3. Symbol is the leading manufacturer of portable bar code driven data transaction systems, with two million scanners and hand-held computers installed. Symbol designs, manufactures, and markets bar code laser scanners, portable computers, and radio frequency data communications networks that are used as strategic building blocks in technology systems for retail, warehousing, distribution, manufacturing, package and parcel delivery, and other industries.

4. Symbol's products include the "Spectrum One" network, a real time data collection system that uses Part 15 spread spectrum transmission in the 902-928 MHz band. Spectrum One and products that communicate over the network constitute the fastest growing segment of the retail automation market. More than 50% of all new installations of wireless data collection systems are based on spread spectrum technology operating in the 902-928 MHz band. Such systems based on high data rates, as opposed to the low data rate obtained on narrow band licensed channels, have revolutionized this industry. Typical Spectrum One applications include--

-- retail: pricing on the sales floor, inventory control on the sales floor and stock room, and incoming receiving control;

-- warehousing and distribution: at the receiving dock, for pick up and put away, and at the shipping dock;

-- manufacturing: raw material, work in progress, finished goods, inventory control, production tracking, and quality assurance reporting;

-- transportation: tracking of shipments so as to reduce lost or misdirected shipments and respond to customer inquiries quickly -- transportation markets serviced include passenger airlines, US Postal, and freight trucking; and

-- wireless store: Point Of Sale (POS) checkout is moving toward the use of distributed processing (small hand-held computers used for checkout, shelf replenishment, customer service, etc.) and associated wireless communications over spread spectrum networks, which require a high data rate. Movable POS terminals (such as cash registers) now operate over Spectrum One, allowing flexibility, cost savings, and better customer service.

Spectrum One automates tasks in real time, provides dramatic

[redacted]

been in the 30-50% range. Overall, industry customers have invested some $300 million in Part 15 radio products at 902-928 MHz alone. The retail industry expects a large percentage of existing stores to "go wireless" during this decade, a step that opens up whole new ways of doing business -- from pen computers carried by sales clerks, to portable hand-held POS registers, to easily movable checkout stations.

6. Each of these existing (and future) systems is based on spread spectrum technology operating in the 902-928 band. These innovations increase customer service and operating efficiency in one of the largest industries in the U.S. The hundreds of thousands of application-specific devices already shipped are soon to be joined by wireless PBX and wireless Centrex systems and millions of consumer-owned cordless telephones, and no doubt by other products not yet imagined.

II. THE COMMISSION SHOULD NOT LICENSE HIGH-POWERED LMS OPERATIONS IN THE 902-928 MHz BAND.

7. The Notice proposes to license LMS in the 902-928 MHz band at a maximum peak effective radiated power of 300 watts.[3/] The Commission expects LMS, a considerably expanded version of the interim Automatic Vehicle Monitoring ("AVM") service,[4/] to

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[3/] Notice ¶ 30. The 902-928 MHz band is also used by amateur operators, the U.S. Government nationwide for radiolocation, Industrial, Scientific, and Medical ("ISM") equipment, and a wide variety of Part 15 applications.

[4/] Notice ¶ 9. See 47 C.F.R. § 90.239.

grow rapidly.[5/] Eligibles for LMS licenses would include private carriers operating for profit.[6/]

8. Symbol objects to these proposals because they threaten the integrity and reliability of important Part 15 services currently provided in the 902-928 MHz band. Even though the Notice expresses repeated concern about possible interference to LMS from Part 15 transmitters,[7/] it barely mentions interference the other way, from 300-watt LMS transmitters to low-power

[redacted]

devices are designed to function properly in an unlicensed environment: While operating within FCC-prescribed limits, they can still accept a reasonable amount of interference without diminishing their capacity to boost users' productivity. Moreover, such devices are able to tolerate incoming interference not only from other Part 15 users and ISM equipment, but also from licensed amateur operators, Government radiolocation, and existing AVM operations.

10. The ability of diverse users to coexist under the Part 15 regulatory scheme has not only directly benefited many industries and citizens, but has also advanced the goals of the Commission itself. Equipment is easily available and responsive to customers' needs. The Commission's only regulatory burden is the straightforward process of equipment certification; there is no need to grant and renew licenses, conduct lotteries, maintain license databases, or resolve quarrels among licensees. Perhaps most important, even a radical technological advance can reach the marketplace quickly, without the lengthy delays required for a Commission rule making. Manufacturers can introduce innovative technologies as fast as they can obtain certifications; and providers can offer new services as fast as the equipment becomes available. In some ways the Part 15 regulatory environment approaches the ideal -- while leaving development and deployment decisions in the hands of the users and the marketplace, it nonetheless effectively protects the public from the effects of harmful interference.

11. Adoption of the proposed rules would fundamentally alter this state of affairs in the 902-928 MHz band. The introduction of unanticipated, high-power sources of interference would seriously threaten the continued use of low-power communications devices under Part 15, including Symbol's products. Not only would an LMS allocation in this band disrupt present operations, but it would also be a clear disincentive to further development of badly-needed technologies that increase spectrum efficiency through sophisticated sharing techniques.

12. It does not answer these concerns to say that Part 15 users will not be heard to oppose the introduction of a licensed service because they are secondary to licensed services (such as LMS).[11/] Being "secondary" in frequency use does not make Part 15 operations secondary in importance to the public interest. To the contrary, in these days of spectrum overcrowding, the Commission should be actively encouraging shared, unlicensed use. But adoption of the LMS proposal would have just the opposite effect: It would warn the public that any technology operating on a secondary basis cannot be depended upon for long-term service, and that investing in such a technology carries unpredictable and largely unmanageable risks.

13. The Commission has always recognized that its rules are part of the overall context in which businesses make decisions about what services to offer and to buy, which technologies to

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[11/] 47 C.F.R. § 15.5(b).

develop and to use, and how best to invest available resources. Changes in the rules can bear directly on all of these decisions. Symbol submits that the Commission should strive to achieve regulation characterized by "stability, predictability, and protection of the public interest."[12/] While the business community understands that regulations will always be subject to change, it is entitled to expect that any such changes will seek the best balance among all legitimate competing interests. To license LMS at 902-928 MHz in the present proceeding would miss that balance by a wide margin by disregarding the public interest in ongoing Part 15 operations.

III. IN THE ALTERNATIVE, THE COMMISSION SHOULD LICENSE LMS ON A SECONDARY BASIS.

14. If the Commission resolves to allocate the 902-928 MHz band to LMS, then it should license LMS on a secondary basis, giving LMS no greater rights than other secondary users of the band.[13/] Symbol has been told that the LMS technology developed by Teletrac, the original petitioner in this proceeding,[14/] is technically fragile and cannot tolerate even moderate interference. But that is no ground on which to grant LMS primary status. That would be like telling pedestrians to keep

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12/ American Tel. & Tel. Co. v. FCC, 836 F.2d 1386, 1394 (D.C. Cir. 1988) (telephone rate regulation).

13/ Should the Commission choose this course, Symbol offers to work with representatives of the LMS industry and other users of the 902-928 MHz band to search for ways of minimizing cross-interference.

14/ Notice ¶ 1.

off the roads because somebody wants to market a car with bad brakes. The problem of sensitivity to interference (if there is one) lies in Teletrac's technology, not in Part 15 operations. Granting LMS primary status would not solve that problem. If LMS manufacturers cannot engineer equipment capable of coexisting peaceably with other users at 902-928 MHz, then LMS belongs elsewhere in the spectrum.[15/]

CONCLUSION

15. Adoption of the proposed rules would severely impair operation of Part 15 low-power spread spectrum systems at 902-928 MHz, and would adversely affect users of those systems and their customers in turn. Symbol urges the Commission not to

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[15/] See e.g., New Telecommunications Technologies, 7 FCC Rcd 6886 (1992) (frequency allocation for new technologies). The Commission has not yet decided what services will be authorized to use this allocation. Id. at ¶ 21.

license LMS in this band. In the alternative, Symbol asks the Commission to authorize LMS on a secondary basis with no more rights than other secondary users.

Respectfully submitted,

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Counsel for
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June 29, 1993

VERIFICATION

I have read the foregoing Comments of Symbol Technologies, Inc. in PR Docket No. 93-61. I declare under penalty of perjury that the facts stated therein are true and correct to the best of my knowledge and belief. Executed on June 24, 1993.

Raymond A. Martino
Director RF Engineering
Symbol Technologies, Inc.